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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,246	09/08/2003	Tadashi Nomura	36856.1117	3071

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EXAMINER
TAKAOKA, DEAN O

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,246	NOMURA ET AL.	
	Examiner	Art Unit	
	Dean O Takaoka	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,8,9,15,16 and 22-30* is/are rejected.

7)☒ Claim(s) *2-7,10-14 and 17-21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/8/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 8, 9, 15, 16, 22, 23, 26, 27 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaitila et al. (U.S. Patent No. 6,788,170).

Claim 1:

Kaitila et al. (structure 800 in Fig. 8a) shows a piezoelectric resonator comprising a substrate (200) having one opening (col. 8, lines 41-43) and a concavity (e.g. angled cavity 210); a vibrating section (802; where 802 defines the center area – col. 7, lines 54,55; the center area further defined as the electrically excitable area – col. 5, lines 9-11) in which at least one pair of an upper electrode (120) and a lower electrode (110) oppose each other so as to sandwich an upper surface and a lower surface of a thin-film section having at least one layer of a piezoelectric thin film (100 and col. 1, line 65),

the vibrating section being disposed over the one of the opening and the concavity; and a heat dissipating film (801 – col. 7, lines 54-59; where damping layer 801 is a film – col. 7, lines 26-31; damps Q where a small Q refers to large energy losses caused by vibrational losses due to heat – col. 6, lines 49-54, thus the damping layer being a heat dissipating film) located over at least one of the upper electrode and the thin-film section so as not to cover the vibrating section (802).

Claim 8:

Where the vibrating section (802) has a polygonal shape (i.e. rectangular) with edges of different lengths as viewed in a thickness direction (top view), and at least the longest edge (either length) extends along an edge of the one of the opening and the concavity (where the distance from the lengthwise edge of the vibrating section to the edge of the concavity is broad and not defined by the claim, thus where Kaitîla et al. also shows where both edges are in a parallel orientation).

Claim 9:

Where the longest edge of the vibrating section (802) has a length that is longer than a distance between the one of the opening and the concavity and a point of the vibrating section that is most distant from the edge of the one opening and the concavity (where Kaitila et al. shows a rectangular vibrating section 802 where the length of the vibrating section would be longer than any edge of the vibrating section with respect to the cavity, shown in the top and planar views in Fig. 8a).

Claim 15:

A piezoelectric resonator comprising a substrate (200) having one opening (col. 8, lines 41-43) and a concavity (e.g. angled cavity 210); a vibrating section (802) in which at least one pair of an upper electrode (120) and a lower electrode (110) oppose each other so as to sandwich an upper surface and a lower surface of a thin-film section having at least one layer of a piezoelectric thin film (100), the vibrating section being disposed over the one of the opening and the concavity; where the vibrating section as viewed in a thickness direction (top view), has a polygonal shape (i.e. rectangular) with edges of different lengths and at least the longest edge (either length) extends along an edge of the one of the opening and the concavity (discussed in the reasons for rejection of claims 1 and 8 above).

Claim 16:

Where the longest edge of the vibrating section (802) has a length that is longer than a distance between the one of the opening and the concavity and a point of the vibrating section that is most distant from the edge of the one opening and the concavity (discussed in the reasons for rejection of claim 9 above).

Claim 22:

Where the piezoelectric thin film is composed mainly of zinc oxide or aluminum nitride (col. 2, line 11).

Claims 23 and 27:

Where the piezoelectric resonator comprises a piezoelectric filter (where any resonator comprises a resonant filter and col. 1, lines 13-15).

Claims 26 and 30:

Where the piezoelectric resonator comprises a communication device (col. 1, lines 13-33).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 24, 25, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaitila et al. in view of Ella (U.S. Patent No. 5,910,756).

Kaitila et al. shows a piezoelectric resonator, discussed in the reasons for rejection of claims 1 and 15 above, but is silent with respect the piezoelectric resonator comprising a specific filter such as a well-known ladder or duplexer configurations.

Ella shows a similar piezoelectric resonator (such as shown in Fig. 9i) where the piezoelectric resonator comprises a ladder and duplexer configurations (abstract; col. 7, line 51; and col. 8, line 44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the piezoelectric resonator disclosed by Kaitila et al. to be used in a ladder and duplexer configurations disclosed by Ella. Such a modification would have realized the advantageous benefit of providing a steeply sloped passband edges providing improved frequency responses (Ella – col. 7, lines 61-65); where the duplexer provides a practical application to provide transmit and receive filters in mobile phone applications (Ella – col. 8, lines 43-65); further where Ella is a

named inventor in US '170 and of the same assignee thus suggesting the obviousness of the modification.

Allowable Subject Matter

Claims 2 – 7, 10 – 14 and 17 – 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bradley et al. – shows a resonator with a protective covering (54 – Fig. 3).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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December 13, 2004